

concentrate and decussate in the same manner ; thus agreeing in every respect, except in the nervous filaments to which they give origin. Hence he explains the phenomena of the loss of sensibility as well as the power of motion of one side of the body, consequent on injuries of the other side of the brain.

The Society then adjourned over Whitsun Week to the 29th of May.

May 29, 1834.

JOHN WILLIAM LUBBOCK, Esq., M.A., V.P. and Treasurer,
in the Chair.

A paper was read, entitled, "On the Principle of Construction and General Application of the Negative Achromatic Lens to Telescopes and Eyepieces of every description." By Peter Barlow, Esq., F.R.S.

This paper is intended as a more full illustration of the principles on which the negative achromatic lens is constructed and applied, than has been given in the extract from the author's letter to Mr. Dollond, contained in the paper of the latter, lately read to the Society, on his ingenious application of that lens to the micrometer eyepiece. The author shows that its advantages are not confined to this instrument, but that it is applicable to any eyepiece positive or negative to the erecting eyepiece, and, indeed, to any telescope of fluid or glass, and also to refractors.

A paper was also read, entitled, "Some remarks in reply to Dr. Daubeny's Note on the Air disengaged from the Sea over the site of the recent Volcano in the Mediterranean." By John Davy, M.D., F.R.S. Assistant Inspector of Army Hospitals.

Respecting the air in question, which Dr. Davy had found to consist of about 80 per cent. of azote and 10 oxygen, he had remarked that two views might be taken of its origin ; the one, that it was of volcanic source ; the other, that it was derived from the sea water, and merely disengaged by the heat of the volcano. Dr. Davy, rejecting the former of these views, had adopted the latter, for reasons, the validity of which was controverted by Dr. Daubeny ; and the purpose of the present paper is to answer the objections urged against them, and to bring additional evidence in support of his opinion.

A paper was then read, entitled, "On the number of Primitive Colorific Rays into which White Light may be separated." By Paul Cooper, Esq. Communicated by J. G. Children, Esq. Sec. R.S.

From a consideration of the circumstances in which white light is decomposed by the prism, in different experiments, and of the various appearances of the spectra which result, the author is led to the opinion that the primary colours composing white light are not seven, as conceived by Newton ; nor four, as supposed by Wollaston ; but only three : and that these three are not red, yellow, and

blue, as imagined by Brewster, but red, green, and violet; the first and last forming the terminal parts of the spectrum, and the green occupying an intermediate position; and the various tints which intervene being the result of superpositions, in various quantities, of these respective primary colours. He pursues the consequences of this hypothesis, applying it to a great variety of forms of experiment, not only by the direct observation of beams of refracted light, but by viewing the prismatic spectrum through different media, capable of absorbing each of the primitive colours in different degrees: and he finds the results to accord exactly with the hypothesis he proposes, and on which he therefore concludes that their true explanation must be founded. He conceives that the errors of preceding experimentalists have arisen from their neglecting to take into account the effects of diffraction, which introduces considerable confusion into the results.

A paper was also read, entitled, "An Investigation of the Laws which govern the Motion of Steam-Vessels, deduced from experiment." By P. W. Barlow, Esq. Civil Engineer. Communicated by Dr. Roget, Sec. R.S.

The author commences with the description of a paddle-wheel for steam-vessels, of a new construction, in which the floats are made to enter and leave the water nearly in a vertical position. He then investigates several formulæ adapted to the calculation of the forces and velocities arising from this form of the apparatus; and gives an account of the results of various experiments made on its efficiency as compared with the common wheels, and with relation to the consumption of fuel. The general results to which he is led are as follow:—1st. When vessels are so laden as that the wheel is but slightly immersed, little advantage is derived from the vertically acting paddles. 2ndly. In cases of deep immersion, the latter has considerable advantage over the wheel of the usual construction. 3rdly. In the common wheel, while the paddle passes through the lower portion of the arc, that is when its position is vertical, it not only affords less resistance to the engine, but is less effective in propelling the vessel than in any part of its revolution. 4thly. The paddle of the wheel, while passing through the lower portion of the arc, affords more resistance to the engine, and is more effective in propelling the vessel, than in any part of its revolution; a property which is a serious deduction from its value; for, in consequence of the total resistance to all the paddles being so much less than in the common wheel, much greater velocity is required to obtain the requisite pressure, and a greater expenditure of steam power is incurred. This loss of power is most sensible when the wheel is slightly immersed; but in cases of deep immersion the vertical paddle has greatly the advantage. 5thly. In any wheel, the larger the paddles the less is the loss of force; because the velocity of the wheel is not required to exceed that of the vessel in so great a degree, in order to acquire the resistance necessary to propel the vessel. 6thly. With the same boat and the same wheel no advantage is gained by reducing the paddle so as to